

**REMARKS**

Claims 1-12 are pending in this Application. Claims 1-12 were rejected by the Examiner. The Applicant has amended claims 1 and 7. New claims 26 and 27 were added by the Applicant. All claim amendments and new claims are fully supported by the specification. No new matter has been added.

**35 U.S.C. §103(a) – Claims 7, 8, 11 and 12**

The Examiner rejected claims 7, 8, 11 and 12 under 35 U.S.C. §103(a) as being unpatentable over Schramm et al. (US Ref. No. 6,208,663) in view of Fong et al. (US Ref No. 6,931,569), Yonge III et al. (US Ref. No. 6,522,650) and Cheng et al. (US Ref No 2002/0191544).

In order to establish a *prima facie* case of obviousness, the Examiner must demonstrate there is a suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine the reference teachings. Furthermore, the prior art references must teach or suggest **all** of the claim features. The Examiner is not free to pick bits and pieces from the prior art and, with the hindsight benefit of the Applicant's disclosure, attempt to reconstruct the invention. Orthopedic Equipment Inc. v. U.S., 217 U.S.P.Q. 193, 199 (Fed. Cir. 1983).

The Applicant's claimed invention in amended independent claim 7 recites:

Physical automatic request repeat apparatus employed by a base station, the physical automatic request repeat mechanism for receiving data in data blocks from a higher layer ARQ mechanism, the physical automatic repeat apparatus comprising:

a transmitter having:

means for receiving the data blocks from the higher layer ARQ mechanism;

means for formatting the received data blocks into packets for transmission, the packets being smaller in size than the data blocks, each packet having a particular encoding/data modulation;

means for appending error check sequences;

means for transmitting the packets;

means for storing the packets for retransmission in a buffer memory incorporated into the transmitter;

means for monitoring a return channel for receipt of an acknowledgment for each packet that the packet has been received;  
means for limiting the number of retransmissions to an operator-defined integer value;  
means for clearing the buffer memory after the integer value is reached;  
means for retransmitting an original or a selectively modified packet, if an acknowledgment for that packet is not received;  
means for collecting retransmission statistics; and  
means for adjusting each particular data modulation using the collected retransmission statistics; and  
a receiver having:  
means for receiving packets;  
means for decoding and error checking each received packet; and  
means for generating an acknowledgment at the physical layer if that received packet has an acceptable error rate; and  
wherein a physical layer ARQ mechanism comprising the means for retransmitting is transparent to the higher layer ARQ mechanism.

Among other deficiencies in the Schramm, Fong, Yong, and Cheng references, there is no teaching, suggestion, or motivation in the Schramm, Fong, Yong, or Cheng references to store the packets for retransmission in a buffer memory incorporated into the transmitter, limit the number of retransmissions to an operator-defined integer value, and clear the buffer memory after the integer value is reached. Nor is there any teaching, suggestion, or motivation in the same references to append error check sequences, and retransmit and original or selectively modified packet.

Accordingly, Applicant's claimed invention as claimed in amended independent claim 7 is patentably distinct from the Schramm, Fong, Yonge, and Cheng references, whether taken alone or in any combination with one another.

Claims 8, 11, and 12 depend from the Applicant's patentable amended independent claim 7, and are therefore patentable for at least the same reasons as Applicant's patentable amended independent claim 7.

Additionally, the Applicant's new independent claim 26 recites:

A base station implementing physical layer automatic repeat request, including a transmitter and a receiver, the base station for receiving data in data blocks from a higher layer ARQ mechanism, the base station comprising:

- a physical layer transmitter for receiving the data from the higher layer ARQ mechanism in data blocks, formatting the received data blocks into packets, the packets being smaller in size than the data blocks, and each packet having a forward error correction (FEC) encoding/data modulation, appending the error check sequences, transmitting the packets, storing the packets for retransmission in a buffer memory incorporated into the transmitter, monitoring a return channel for receipt of an acknowledgment for each packet that the packet has been received, limiting the number of retransmissions to an operator-defined integer value, clearing the buffer memory after the integer value is reached, and retransmitting original or selectively modified packets in response to failure to receive a corresponding acknowledgment for a given packet;

- an acknowledgment receiver for receiving the corresponding acknowledgment;

- an adaptive modulation and coding controller for collecting retransmission statistics, and adjusting the particular data encoding/modulation using the collected statistics, and varying subchannels used for transmission of the packets;

- a physical layer receiver for demodulating received packets;

- a combiner/decoder for buffering, decoding and detecting packet errors; and

an acknowledgment generator for generating an acknowledgment for each packet if that packet has an acceptable error rate; and

wherein a physical layer ARQ mechanism comprising the physical layer transmitter and the acknowledgement receiver is transparent to the higher layer ARQ mechanism.

Similarly, the Applicant's new independent claim 27 recites:

Physical automatic request repeat apparatus employed by a base station, the physical automatic request repeat mechanism for receiving data in data blocks from a higher layer ARQ mechanism, the physical automatic repeat apparatus comprising:

a transmitter having:

means for receiving the data blocks from the higher layer ARQ mechanism;

means for formatting the received data blocks into packets for transmission, the packets being smaller in size than the data blocks, and each packet having a forward error correction (FEC) encoding/data modulation;

means for appending error check sequences;

means for transmitting the packets;

means for storing the packets for retransmission in a buffer memory incorporated into the transmitter;

means for monitoring a return channel for receipt of an acknowledgment for each packet that the packet has been received;

means for limiting the number of retransmissions to an operator-defined integer value;

means for clearing the buffer memory after the integer value is reached;

means for retransmitting an original or a selectively modified packet, if an acknowledgment for that packet is not received;

means for collecting retransmission statistics; and

means for adjusting each particular data modulation using the collected retransmission statistics;

means for varying subchannels used for transmitting the packets; and

a receiver having:

means for receiving packets;

means for decoding and error checking each received packet; and

means for generating an acknowledgment at the physical layer if that received packet has an acceptable error rate; and  
wherein a physical layer ARQ mechanism comprising the means for retransmitting is transparent to the higher layer ARQ mechanism.

There is no suggestion, teaching, or motivation in the Schramm, Fong, Yonge, and Cheng references to vary subchannels used for transmission of the packets. Accordingly, Applicant's new claims 26 and 27 are patentably distinct from the Schramm, Fong, Yonge, and Cheng references, whether taken alone or in any combination with one another.

**35 U.S.C. §103(a) – Claims 1, 2, 5 and 6**

The Examiner rejected claims 1, 2, 5 and 6 under 35 U.S.C. §103(a) as being unpatentable over Sipola (US Ref. No. 6,529,561) in view of, Yonge et al., Schramm et al. (US Ref. No. 6,208,663) and further in view of Fong et al. (US Ref No. 6,931,569) and Cheng et al. (US Ref No 2002/0191544).

The Applicant's invention as claimed in amended independent claim 1 recites:

A base station implementing physical layer automatic repeat request, including a transmitter and a receiver, the base station for receiving data in data blocks from a higher layer ARQ mechanism, the base station comprising:

a physical layer transmitter for receiving the data from the higher layer ARQ mechanism in data blocks, formatting the received data blocks into packets, the packets being smaller in size than the data blocks, each packet having a particular encoding/data modulation, appending the error check sequences, transmitting the packets, storing the packets for retransmission in a buffer memory incorporated into the transmitter, monitoring a return channel for

receipt of an acknowledgment for each packet that the packet has been received, limiting the number of retransmissions to an operator-defined integer value, clearing the buffer memory after the integer value is reached, and retransmitting original or selectively modified packets in response to failure to receive a corresponding acknowledgment for a given packet;

an acknowledgment receiver for receiving the corresponding acknowledgment;

an adaptive modulation and coding controller for collecting retransmission statistics, and adjusting the particular data encoding/modulation using the collected statistics;

a physical layer receiver for demodulating received packets;

a combiner/decoder for buffering, decoding and detecting packet errors; and

an acknowledgment generator for generating an acknowledgment for each packet if that packet has an acceptable error rate; and

wherein a physical layer ARQ mechanism comprising the physical layer transmitter and the acknowledgement receiver is transparent to the higher layer ARQ mechanism.

which is not taught nor suggested in the Sipola reference, nor do the Schramm, Fong, Yonge, or Cheng references cure this lack of teaching. Accordingly, Applicant's claimed invention as claimed in amended independent claim 1 is patentably distinct from the Sipola, Schramm, Fong, Yonge and Cheng references, whether taken alone or in any combination with one another.

Claims 2, 5, and 6 depend from the Applicant's patentable amended independent claim 1, and are therefore patentable for at least the same reasons as Applicant's patentable amended independent claim 1.

Additionally, the Sipola, Schramm, Fong, Yonge, and Cheng references do not teach or suggest varying subchannels used for transmission of the packets.

Accordingly, Applicant's new claims 26 and 27 are patentably distinct from the Sipola, Schramm, Fong, Yonge, and Cheng references, whether taken alone or in any combination with one another.

**35 U.S.C. §103(a) – Claim 9**

The Examiner rejected claim 9 under 35 U.S.C. §103(a) as being unpatentable over Schramm in view of Yonge, Fong, and Cheng as applied to claim 7, and further in view of Agee (US Ref. No. 6,128,276).

There is no teaching, suggestion, or motivation in the Schramm, Yonge, Fong, or Cheng references to store the packets for retransmission in a buffer memory incorporated into the transmitter, limit the number of retransmissions to an operator-defined integer value, and clear the buffer memory after the integer value is reached, as is recited in the Applicant's patentable amended independent claim 7. In addition, there is no teaching, suggestion, or motivation in the same references to append error check sequences, or to retransmit and original or selectively modified packet. Furthermore, the Agee reference fails to cure these deficiencies.

Since claim 9 depends from the Applicant's patentable amended independent claim 7, claim 9 is patentable for at least the same reasons as patentable amended independent claim 7.

Additionally, the Schramm, Fong, Yonge, Agee and Cheng references do not teach or suggest varying subchannels used for transmission of the packets. Accordingly, Applicant's new claims 26 and 27 are patentably distinct from the



Schramm, Fong, Yonge, Agee and Cheng references, whether taken alone or in any combination with one another.

**35 U.S.C. §103(a) – Claim 10**

The Examiner rejected claim 10 under 35 U.S.C. §103(a) as being unpatentable over Schramm in view of Yonge, Fong and Cheng as applied to claim 7, and further in view of Birru (US App. No. 2002/0037058).

Again, there is no teaching, suggestion, or motivation in the Schramm, Yonge, Fong, or Cheng references to store the packets for retransmission in a buffer memory incorporated into the transmitter, limit the number of retransmissions to an operator-defined integer value, and clear the buffer memory after the integer value is reached, as is recited in the Applicant's patentable amended independent claim 7. In addition, there is no teaching, suggestion, or motivation in the same references to append error check sequences, or to retransmit and original or selectively modified packet. The Birru reference also fails to cure these deficiencies.

Since claim 10 depends from the Applicant's patentable amended independent claim 7, claim 10 is patentable for at least the same reasons as patentable amended independent claim 7.

Additionally, the Schramm, Fong, Yonge, Birru and Cheng references do not teach or suggest varying subchannels used for transmission of the packets. Accordingly, Applicant's new claims 26 and 27 are patentably distinct from the

Schramm, Fong, Yonge, Birru and Cheng references, whether taken alone or in any combination with one another.

**35 U.S.C. §103(a) – Claim 3**

The Examiner rejected claim 3 under 35 U.S.C. §103(a) as being unpatentable over Sipola, in view of Schramm, Yonge, Fong and Cheng as applied to claim 1, and further in view of Agee. In making the rejection, the Examiner stated:

There is no teaching, suggestion, or motivation in the Sipola, Schramm, Yonge, Fong, or Cheng references to store the packets for retransmission in a buffer memory incorporated into the transmitter, limit the number of retransmissions to an operator-defined integer value, and clear the buffer memory after the integer value is reached, as is recited in the Applicant's patentable amended independent claim 1. In addition, there is no teaching, suggestion, or motivation in the same references to append error check sequences, or to retransmit and original or selectively modified packet. Again, the Agee reference fails to cure these deficiencies.

Since claim 3 indirectly depends from the Applicant's patentable amended independent claim 1, claim 3 is patentable for at least the same reasons as patentable amended independent claim 1.

Additionally, the Sipola, Schramm, Fong, Yonge, Agee and Cheng references do not teach or suggest varying subchannels used for transmission of the packets.

Accordingly, Applicant's new claims 26 and 27 are patentably distinct from the Sipola, Schramm, Fong, Yonge, Agee and Cheng references, whether taken alone or in any combination with one another.

**35 U.S.C. §103(a) – Claim 4**

The Examiner rejected claim 4 under 35 U.S.C. §103(a) as being unpatentable over Sipola, in view of Yonge, Schramm, Fong and Cheng as applied to claim 1, and further in view of Birru (US App. No. 2002/0037058).

There is no teaching, suggestion, or motivation in the Sipola, Yonge, Schramm, Fong, or Cheng references to store the packets for retransmission in a buffer memory incorporated into the transmitter, limit the number of retransmissions to an operator-defined integer value, and clear the buffer memory after the integer value is reached, as is recited in the Applicant's patentable amended independent claim 1. In addition, there is no teaching, suggestion, or motivation in the same references to append error check sequences, or to retransmit and original or selectively modified packet. Furthermore, the Birru reference fails to cure these deficiencies.

Since claim 4 depends from the Applicant's patentable amended independent claim 1, claim 4 is patentable for at least the same reasons as patentable amended independent claim 1.

Additionally, the Sipola, Schramm, Fong, Yonge, Birru and Cheng references do not teach or suggest varying subchannels used for transmission of the packets.

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Accordingly, Applicant's new claims 26 and 27 are patentably distinct from the Sipola, Schramm, Fong, Yonge, Birru and Cheng references, whether taken alone or in any combination with one another.

**Conclusion**

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the Applicant's undersigned attorney by telephone at the Examiner's convenience.

In view of the foregoing remarks and amendments, the Applicant respectfully submits that the present application, including claims 1-12 and 26-27, is in condition for allowance and a notice to that effect is respectfully solicited.

Respectfully submitted,

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